
Departmental Seminar

Seminar Title	: Conference Return Seminar on 'Evaluation of conductive properties of Additively Manufactured Electrodes (AME) from ABS Conductive Filament: Influence of Pre-treatment and structural analysis'
Speaker	: Mr. Singuru Rajesh
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Venue	: New Seminar Hall
Date and Time	: 30 Jan 2025 (4.00 p.m.)
Abstract	: In this study, we investigated the potential of additive manufacturing (AM) to produce conductive electrodes using ABS-based conductive filament. The aim was to evaluate the effect of pre-treatment on the conductivity of the 3D-printed electrodes and to compare their structural and electrical properties. Conductivity measurements were performed on samples with and without pre-treatment to assess the impact of surface modifications. X-ray diffraction (XRD), Field Emission Scanning Electron Microscopy (FESEM), and Raman spectroscopy were employed to analyze the structural, morphological, and chemical properties of the printed electrodes. The results show that the conductive filament exhibits promising electrical performance, with pre-treatment leading to improved conductivity due to enhanced filament interconnectivity. XRD and FESEM analysis revealed favourable microstructural characteristics, while Raman spectra confirmed the presence of conductive carbon networks within the material. The findings suggest that ABS conductive filaments can be effectively utilized in additive manufacturing of electrodes, offering a viable alternative for low-cost, customizable conductive components in various electronic applications. These results provide a positive outlook for the use of such filaments in 3D printing of functional, electrically conductive parts in electrochemistry. Keywords: Additive manufacturing (AM); 3D-printed electrodes; XRD; FESEM and ABS